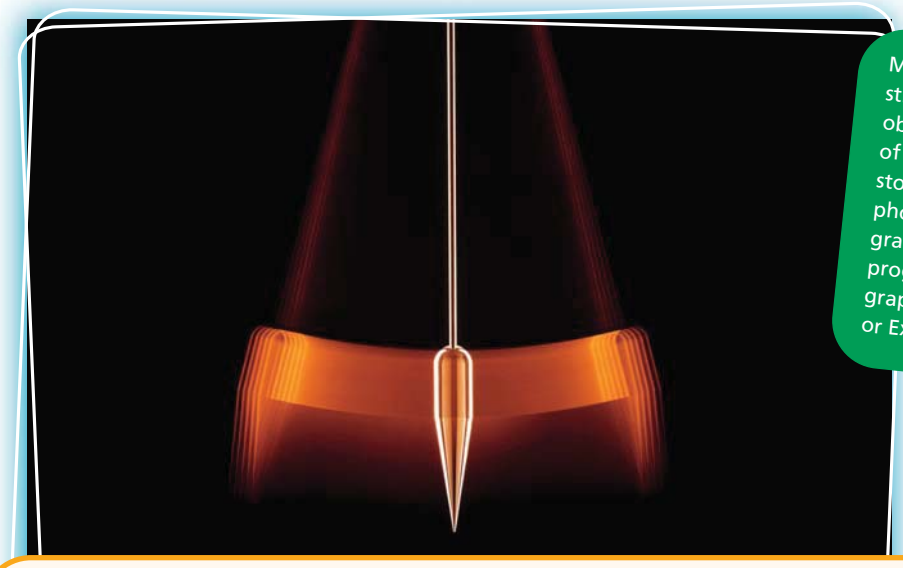
Rich task

Self-assessment

Your task is to determine whether there is a proportional relationship between the length of a pendulum and the time it takes to complete one swing.



Materials required: string, small heavy object (such as a bunch of keys), hook, stopwatch (or mobile phone), tape measure, graph paper or graphing program (such as a graphing calculator or Excel).

1. Make a pendulum with a length of string and a small heavy weight. You will need somewhere to suspend your pendulum so that it can swing freely.
2. Work with a partner to investigate whether the length of a pendulum affects its swing. You will need to try different lengths for your pendulum, work out the average time of swing for each length and graph your results.
3. Write a report of your investigation explaining your aim, methodology, results (including graphs) and conclusions. Your report should include a discussion of how you could extend or refine your investigation. The length of the report should not exceed three A4 pages.

Make a note of the different assumptions you made, how you worked out the average length of swing and any possible sources of error.

Assessment criteria

- Statement of the aim of the investigation
- Description of methodology
- Record of the mathematics used, including a diagram, table of results and graph
- Discussion of possible sources of error and how these were controlled
- Suggestions for improving or extending the investigation
- Clear conclusions
- Acknowledgements of assistance received and resources used.

Victorian Essential Learning Standards

Thinking: Level 6
Explain conscious changes in their own and others' thinking when reviewing information and refining ideas and beliefs